

Listing of All Claims Including Current Amendments

1-8. (cancelled).

9-17. (cancelled).

18. (currently amended) A device for receiving optical signals, comprising:

a stationary light-guiding object provided substantially in the form of a ring, said stationary light-guiding object having a lateral irradiation surface extending along a length of the stationary light-guiding object for receiving optical signals transmitted by a moveable ~~excitation~~ stimulation unit and having a given wavelength, the irradiation surface ~~being adjacent to~~ extending along a propagation path along which light ~~primarily travels~~ propagates within said light-guiding object, said light-guiding object including a material having an electron arrangement in which a population inversion ~~may be~~ is caused by an energetic excitation and in which a stimulation by the light of said optical signals causes an induced emission of light at the same wavelength and in the same direction as that of the optical signals, the light of the optical signals being thereby amplified;

a[[[n]] stationary excitation unit for emitting light to cause the population inversion in the material included in said light-guiding object;

a detector optically coupled to said stationary light-guiding object for detecting light having the wavelength of the optical signals; ~~and~~

a wavelength-selective element for filtering out light emitted by said stationary excitation unit from the light of the amplified optical signals to be detected by said detector;

wherein said light-guiding object is constructed of a material in which the light of the optical signals received through the irradiation surface at angles of between 0 and 90 degrees relative to the irradiation surface is diffused such that the diffused light has a component along the propagation direction of said light-guiding object; and

wherein said moveable stimulation unit moves relative to said stationary light-guiding object to form a rotary optical receiving device.

19. (currently amended) A method for processing optical signals, comprising the steps of:

providing a stationary light-guiding object substantially in the form of a ring with a lateral irradiation surface extending along a length of the stationary light-guiding object for receiving optical signals transmitted by a moveable stimulation unit, the light-guiding object having adjacent to a propagation path along which light ~~primarily travels~~ propagates within the light-guiding ~~means~~ object, the light-guiding object including a material having an electron arrangement in which a population inversion ~~may be~~ is caused by an energetic excitation and in which ~~then~~ a stimulation by the light of the optical signals causes an induced emission of light of the same wavelength and direction as that of the optical signals, the light of the optical signals being thereby amplified;

causing a population inversion in the material included in the light-guiding object using an stationary excitation unit, and receiving an optical signal in the stationary light-guiding object through the irradiation surface;

filtering out with a wavelength-selective element the light of the stationary excitation unit from the light of the optical signals which have been received by the stationary light-guiding object and amplified by induced emission of the stationary light-guiding object; and

detecting with a detector the amplified optical signals from which the light of the stationary excitation unit has been filtered out;

wherein the light-guiding object has been selected to be constructed of a material in which the light of the optical signals received through the radiation surface at angles of between 0 to 90 degrees relative to the irradiation surface is diffused such that the diffused light has a component along the propagation direction of the light-guiding object; and

wherein said moveable stimulation unit moves relative to said stationary light-guiding object to form a rotary optical receiving device.

20. (cancelled)

21. (currently amended) A method for receiving optical signals according to claim 19, wherein the light-guiding object is a stationary fiber-optical waveguide ~~substantially shaped to form a ring~~ and having has a detector at one end, and ~~the source of optical signals is disposed on a rotating element such that~~ the emitted optical signals are continuously received by the stationary light-guiding object during the rotation of the rotating element moveable stimulation unit.

22. (currently amended) A method for receiving optical signals according to claim 19, wherein a detector is disposed at each end of the waveguide ~~substantially shaped to form a ring~~, and the position of the source of optical signals is determined by measuring the signal transit times to each detector.

23. (currently amended) A method for receiving optical signals according to claim 19, wherein a detector is disposed at each end of the waveguide ~~substantially shaped to form a ring~~, and the position of the source of optical signals is determined by measuring the signal amplitudes at each detector.

24. (currently amended) A device for processing optical signals, comprising:
a[[n]] moveable stimulation ~~excitation~~ unit for emitting light;
a stationary light-guiding object provided substantially in the form of a ring and
including:

an irradiation surface extending along a length of said stationary light-guiding object for laterally receiving optical signals at angles of between 0 and 90 degrees relative to the irradiation surface;

a propagation path located adjacent to the irradiation surface;

a material having an electron arrangement in which a population inversion may be caused by an energetic excitation and in which an emission of light, at a wavelength corresponding to the wavelength of the received optical signals, may be induced along the propagation path and where the received optical signals are diffused such that they have a component along the light propagation path;

a detector optically coupled to said stationary light-guiding object for detecting light having a wavelength corresponding to the wavelength of the received optical signals; ~~and~~

a wavelength-selective element for filtering out light not corresponding to the wavelength of the received optical signals to be detected by said detector; and

wherein said moveable stimulation unit moves relative to said stationary light-guiding object to form a rotary optical receiving device.